

NEAR MISS WITH UAP NEAR SÃO PAULO AIRPORT

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This article summarizes a near-miss aerial encounter between a Brazilian passenger flight and a single, self-luminous, self-propelled, sphere-shaped phenomenon during an afternoon in 2004.

The exact date of this near-miss event is not known. The primary reporting witness, Capt. XX (the first officer), did not record it in his log book because the senior captain “refused to acknowledge the event in public.” (The primary reporting eyewitness is referred to as Capt. XX. Although he gave permission for his name to be used, I decided against it for his protection.) In correspondence with me, Capt. XX wrote that this flight took place “during the week and not on the weekend.” He also said, “I cannot be precise [about the season] because the weather around here has been changing a lot and you have warm days, bright sunny days even during the winter.” The encounter took place sometime during the afternoon.¹ He recalls seeing cockpit shadows from the sun.

FLIGHT CREW WITNESSES AND PASSENGERS

The primary reporting eyewitness was Capt. XX, 45 years of age. He was flying this leg in an ATR 42-300 twin turboprop, and he had accumulated about 3,000 hours flight time in this type of aircraft. By 2008, he had logged more than 10,000 total flight hours and also had flown many different small-propeller aircraft including the EMB 110 Bandeirante (1,300 hrs.), ATR 442 (3,500 hrs.), and Citation II and Citation Ultra (1,500 hrs.). He had no military flight experience. He had seen another unexplainable self-luminous phenomenon while flying a Citation jet in the vicinity of São Paulo sometime between 1989 and 1991.

The second eyewitness was Senior Capt. YY, 52 years old, sitting in the left seat. During the sighting Capt. XX turned to his left and asked him, “Did you see this? Have you seen this?” He answered, “I saw it, but if you say that, I will deny that I did. I know what it was, but I’ll deny [it].” Nothing more was said between them for years. More recently

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the senior captain has been employed by another airline.²

There were about 16–20 passengers on board and two cabin attendants. Due to the position of the Unidentified Aerial Phenomenon (UAP) relative to the airplane, it is very unlikely that anyone else on board saw it, although this isn’t known for certain.

The witness indicated generally clear air en route to São Paulo from the north. The witness said, “I remember a clear day, city in view. Someway it comes to my mind [that there were] some small cumulus [clouds] around [the] Guarulhos area, but not significantly. . . . it was rather a dry day. . . . [When flying between the navigation fix ERIC and EVER] the air was clear horizontally and vertically. I do not have the METAR, but I think that São Paulo was CAVOK [Ceiling and visibility unlimited].”³ “The sky was blue”⁴ with “winds from 6 to 12 knots.”⁵

THE AIRPLANE

The pilots were flying a French-built (Aérospatiale/Alenia, Avions de Transport Régional) ATR 42-300, two-engine, short-haul, regional, turboprop aircraft. Figure 1 shows a similar model flown by a different airline. This model aircraft has been in revenue service in many countries since 1985 with more than 400 built to date. The “42” refers to the number of passengers. It is considered a relatively high-performance aircraft. The latest version (ATR 42-500) has a maximum cruise speed at 17,000 feet of 300 knots. This airplane was not equipped with a Terminal Collision Avoidance System (TCAS).



Fig. 1. ATR 42-300 in flight.

FLIGHT PATH AND SIGHTING DETAILS

This flight was returning to São Paulo's Congonhas Airport (SBSP) from one of the following small cities to the northwest: Bauru, Marília, Presidente Prudente, Araçatuba, or Araraquara. Capt. XX cannot recall which one. All are within 300 miles of the Congonhas Airport, one of the busiest in Brazil. Congonhas uses two primary navigational approach entry points for landing: Point 1 is SANTANA (STN, discussed below and shown in Figure 2) generally for flights approaching from the northeast, north, and northwest and landing on Runway 17 L and 17R; and Point 2 is referred to as the REDE fix for flights arriving from the coast to the southeast, south, and southwest and landing on Runway 35L and 35R.

The following reconstruction of events is based on Capt. XX's memory and his extensive flight experience flying to and from São Paulo's Congonhas Airport. Without radar confirmation of the UAP's position at any time during this 14-minute-long visual sighting, its location must be considered only approximate. I have arbitrarily selected three locations along the airplane's flight path from which to consider various characteristics of the UAP. These three airplane locations are shown on Figure 2 with bold, block letters as:

- A. At or very near the VOR navigation fix named ERIC; airplane on a heading of 158°.
- B. Passing just north of the VOR fix named SANTANA (STN) shown by concentric circles in the lower center of Figure 2. Here the airplane is banking left and altering its heading by 52° to a new heading of 106°.
- C. On heading of 106° from STN and very "close to the navigation fix named EVER"⁶ and shown by a triangle in Figure 2. This location is only approximate. At this location, the witness estimated he was about one minute flight time before he would normally begin to turn to the right to intercept the instrument landing system localizer to Runway 17.

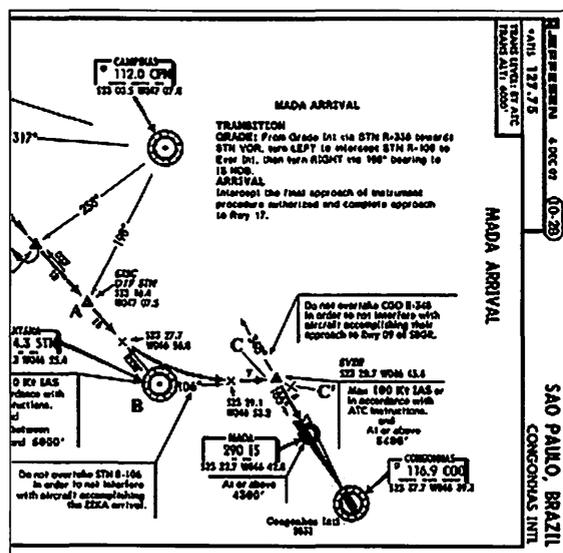


Fig. 2. MADA arrival chart for Runway 17, Congonhas

LOCATION A: ERIC

Capt. XX kindly provided an approach chart,⁷ a portion of which is presented as Figure 2. He definitely remembers arriving at a navigation fix called GRADE and continuing on autopilot toward the south-southeast toward the SANTANA VOR beacon (labeled B in the lower center of Figure 2) following a straight course approximately 60 miles long on a heading of 158°. The flight was conducted under Instrument Flight Rules. Atmospheric visibility was good and the flight was under active ground radar monitoring and vectoring at the time.

Upon arriving at ERIC, Capt. XX noticed a single, relatively intense white light at his ten-thirty or eleven o'clock position (about 30–40° to the left of his flight path). There is another large airport to the north of São Paulo called Cumbica (see Figure 4); its official acronym is SBGR. At this location, the witness's aircraft was at about FL080 (approximately 8,000 feet) and traveling about 180 knots; it was descending and slowing in conformance with air traffic control (ATC) instructions prior to landing. Regarding the estimated location of the UAP, the witness said, "I would rather say [it was] somewhere . . . in between Cumbica Airport and Congonhas Airport."⁸

In order to help visualize the apparent location of the UAP and its approximate angular size within the outline of the windshield, the witness kindly provided several composite illustrations. He used cockpit photos he had taken, while on the ground, of the same model airplane; he stood just behind the pilots' seats on the cockpit's center line. Then he superimposed other daytime aerial photos of the ground he had taken from the air at different locations. Figure 3 depicts the small, round, white UAP seen just left of the aircraft's center windshield post and low on the horizon when he was at Location A (ERIC).

The witness's initial estimate of the distance to the UAP from Location A was 20 nautical miles "in the neighborhood of São Paulo airport." The measured distance from point A and Cumbica Airport is about 38.2 nautical miles.⁹ The measured distance from point A to his destination airport, Congonhas Airport, is about 33.5 nautical miles. Of course, the actual distance to the UAP is not known.

The witness also provided estimates of the angular size of the UAP at each of these three locations. At Location A it appeared as "just another traffic [airplane] approaching them,"¹⁰ "only as a single white light" that flew along a "constant course."¹¹ He said its initial angular size was equivalent to about 1.5 times the thickness of a pencil lead held at arm's length, or about 3 mm. Assuming the viewing distance to the pencil to be 71 cm, the resulting angle is about 14 minutes arc, or just under one-half of the full Moon's diameter of 32'.

Capt. XX said that somewhere between Location A and B he asked Capt. YY to contact center to ask about other possible traffic in the area. But even when they arrived near the SANTANA VOR fix he had not done so. Capt. XX contacted center himself and learned two things: There was

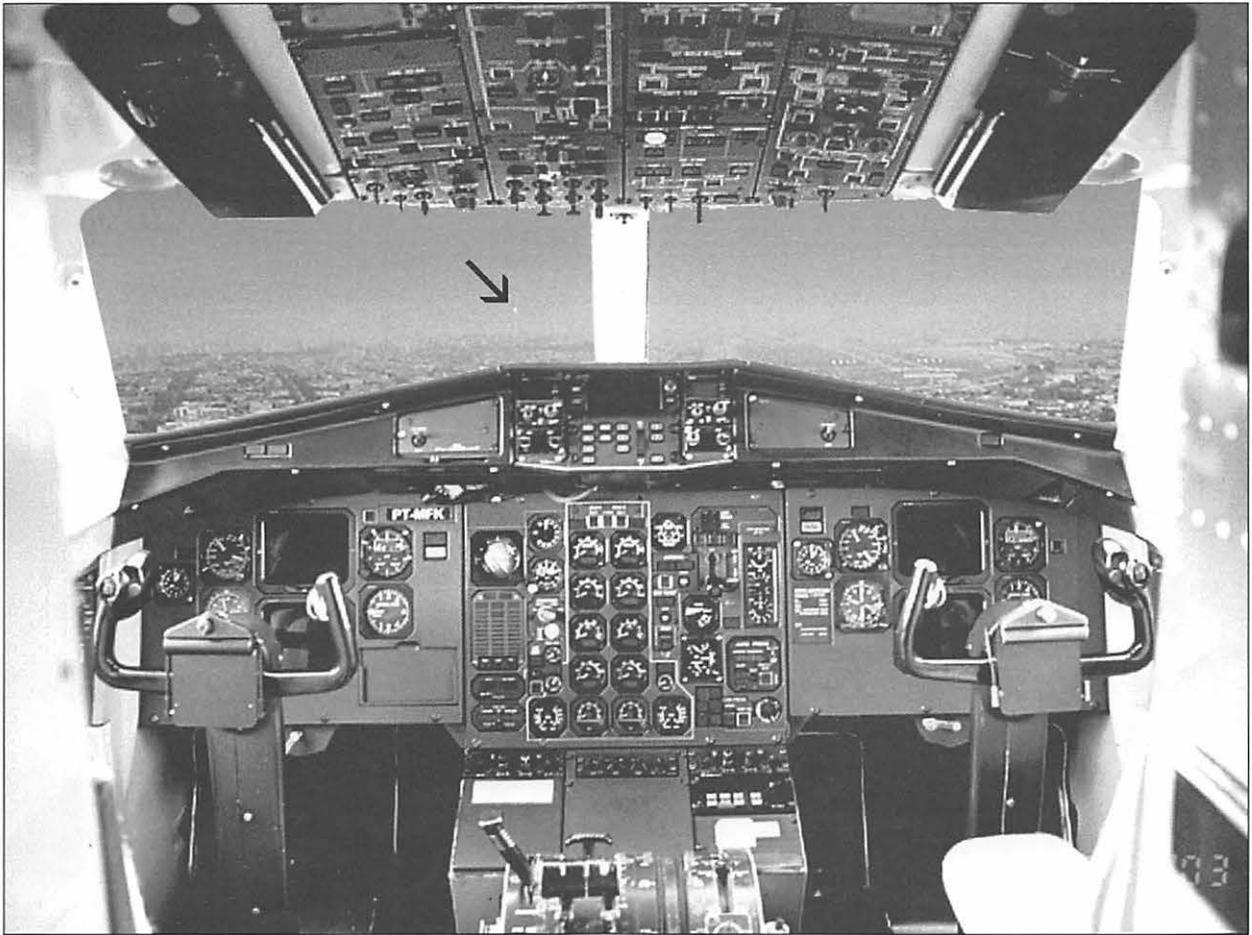


Fig. 3. Approximate location and appearance of the UAP when the airplane was at Location A

another aircraft to his left and at a higher altitude probably bound for Cumbica Airport, and the ground radar showed no other traffic in their area.

The witness also stated that his first plotting of the probable location of the UAP while flying near Location A was visually near prohibited area SBP 429 (S233750; W462902). This airspace extends from the ground to 4,000 feet altitude and is listed as a permanent restriction.¹² The area is labeled Petroquímica (petrochemical factory). He identified two other prohibited areas¹³ of possible relevance to the location of the UAP: (1) SBP 408 Usina Congas (thermoelectric plant, S233402; W463702); this airspace extends from the ground to only 1,000 feet altitude and is listed as a permanent restriction; and (2) SBP 436 Cidade Universitária (which exists to protect the São Paulo University campus). Unless someone at the university was launching and flying a spherically shaped unmanned aerial vehicle or conducting high-energy physics experiments in the lower atmosphere, this prohibited area does not appear to play any role in this event.

LOCATION B: NEAR VOR FIX SANTANA

While the SANTANA (STN) VOR is used as a fixed navigation point, most flights turn left just before reaching it to achieve a smooth outbound VOR radial heading of 106° in

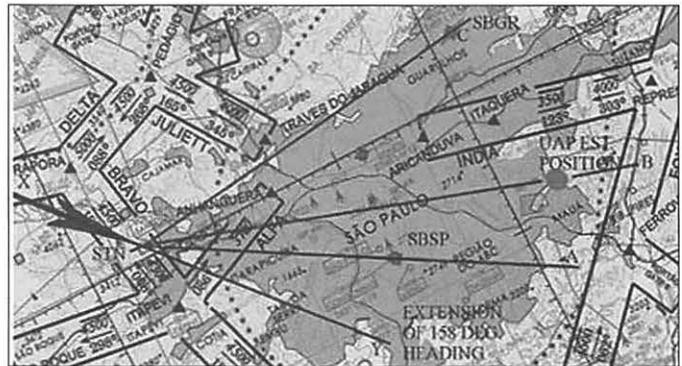


Fig. 4. São Paulo regional chart (annotated points and lines explained in the text)

order to intersect the runway's Instrument Landing System inbound bearing of 166°. Capt. XX recalls that his altitude passing STN was about 6,500 feet above ground level. He was traveling about 165 knots.¹⁴

Figure 4 has been prepared to help better understand the possible azimuth angles of different locations and the UAP as seen from Location B on Figure 2.

Referring to Figure 4, the flight path of the airplane is shown by the diagonal arrow entering at the left center.¹⁵ It points at the SANTANA VOR beacon (STN) but the line has been extended beyond (on heading of 158°) to Y. This straight line is useful in measuring azimuth angles from



Fig. 5. Approximate location and appearance of the UAP when the airplane was on a heading of 106° at Location B

the cockpit to various locations. Line STN-A is directed toward the Congonhas Airport (SBSP), some 17.3 nautical miles distant. Line STN-C is directed toward the Cumbica Airport (SBGR) about 23.8 nautical miles distant. Finally, the small dot represents the estimated location of the UAP (along the line STN-B) when first seen at Location A. Its distance would have been about 29 nautical miles.

Assuming that the airplane was just approaching STN and had not yet begun its left turn, the UAP would have been located 30–40° to their left side. However, if the UAP was not at the dot location but somewhere else between Cumbica and Congonhas airports, then the UAP could have been between about 30–60° arc to the left of their heading.

Upon leveling their wings on their new heading of 106° beyond STN, the UAP was now seen at a bearing of about 125° or about 20° arc on their right side. In other words, their change in heading caused the distant UAP to appear to move across to their right-hand side.

Based on his recent recollection of the UAP while he was near STN, the reporting witness wrote, “As I was concerned about the the object . . . I would prefer not to go faster but slower [than about 165 knots]¹⁶ in order to see better [how] the situation developed. . . . I don’t recall . . . any increase in airspeed while traveling along the 106° heading.”¹⁷

I asked the reporting witness whether the UAP seemed

to be descending with their airplane, that is, whether it appeared to be matching their descent so as to be on a collision course. In response he wrote, “I couldn’t notice any descent movement on the part of the object. As I was descending it remained at the same angle of the cockpit. As it was always steady [maintained a smooth horizontal motion], that called my attention [to it] because if it were following the approach to Runway 17, any traffic along the LOC [localizer] course should not be there for a long time. What I could perceive was that it was moving in a way that I calculated that, if it continued, we would get together [collide]. So, as regarding some sort of [perceived] motion, [there was] only that of an approaching target. But I could not observe that it was descending with me.”¹⁸

Capt. XX asked Capt. YY if he was looking at the other unidentified traffic and learned that he was. The traffic continued to appear to be approaching their airplane. He also asked the senior captain how long approach control would remain silent about the other traffic. About then he noticed that the other object had no navigation lights, but looked only like a self-luminous point or ball. He then asked Capt. YY to contact ATC.

Figure 5 is the witness’s photographic composite image of the UAP when the airplane was on a heading of 106° and nearing a navigational fix indicated by X on Figure 8 but

before beginning to turn right.

After an unspecified period of time when the senior captain had not called ATC, Capt XX called them himself. He was informed that they did not see the other traffic on ground radar. Because the airplane had turned left to the new heading of 106°, and the UAP was moving north, from the cockpit the UAP appeared to have stayed in basically the same two o'clock relative position, which would signal an eventual mid-air collision if nothing else changed.¹⁹

Capt. XX said that the relative bearing to the UAP from the airplane²⁰ was now only about 6° to their right, which confirms the pilot's stated concern that it might collide with them if they both continued their present flight paths.

I attempted to obtain a more accurate determination of the distance to the UAP as seen from Location B (in Figure 2 or Figure 8). Using the chart presented in Figure 4 for basic ground reference points, the witness was asked to assign a probability number from zero to 100²¹ for each of seven equally spaced distances from his own location at STN. The witness's assignment of probabilities is presented in Figure 6.

What these probability estimates suggest is that Capt. XX modified his earlier estimate of the location of the UAP (as he was passing Location B, point STN) and

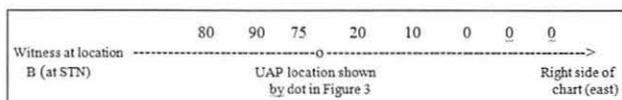


Fig. 6. Probability estimates of range between witness and UAP

now thought that it could have been nearer to him by an unknown amount. Referring to Figure 4, if the UAP was at the location marked by the witness (with the dot) then: (1) its azimuthal location would have been somewhere between the two airports mentioned above, and (2) its distance (from point STN) would be about 28.8 nautical miles. If the airplane were flying at about 165 knots (just beyond STN) and the UAP was 12 nautical miles away at Location B' (see Figure 9) and both were on a direct collision course, they would have met after 4.3 minutes of flight.

Using known distances and speeds of the airplane (Figure 2) between locations A, B, and C, the duration of flight was 10 minutes from A to B and 3.8 minutes from B to C. Knowing these durations to first-order accuracy permits calculations of the velocity of the UAP from A to B and from B to C, assuming that the X marks on Figure 8 are approximately correct. We find a UAP velocity of 28 knots between A to B and 58 knots between B to C.



Fig. 7. Approximate location and appearance of the UAP when the airplane was at Location C at beginning of right-hand banking turn

LOCATION C: JUST BEFORE THE NEAR MISS

At Location C the airplane was at about 5,500 feet altitude and traveling about 150 knots. Normally the pilot would have started his right-hand turn to intercept the runway's localizer upon arriving at the navigational fix labeled EVER.

At this point during the flight Capt. XX said, "this guy [UAP] is very close and is [still] approaching us. This is not an aircraft, only a light, and we are very close. . . . [As] I was heading to EVER then the object was to my right at about 20° or 25°."²² "[A]nd the object [was] approaching [me.] I saw that it was round, like a ball, so it was a sphere."²³

Then, when the airplane was "very close to the interception point on the localizer," the UAP was now so close that Capt. XX decided to turn off the autopilot, bank sharply to the right, and descend slightly to avoid a collision. He wrote that he thought he did this about one minute's flight time before reaching the fix at EVER. This is portrayed by the witness in Figure 7.

At this point both crewmen saw "a great torch [beam] of light [that] swept the cabin [and] caused great confusion." The cabin was suddenly and unexpectedly illuminated from the UAP appearing to come from the left side and moving across to the right. Both crewmen ducked down behind the instrument panel (for protection?) for several seconds, anticipating a mid-air collision. When I asked how long both crewmen bent forward and looked down, Capt. XX wrote, "Well, as soon as I initiated the curve [began to bank right and descend] perhaps in 2 seconds the beam came. I guess I would say about 8 seconds until the beam of light went away. . . . Well, I was with the controls, having the object [so] close by and having to detour and fly the airplane. I think that when I [made] that decision, I started to look at him [Capt. YY], like conveying, 'you see what I am doing?' and immediately [the] light came around [and the] cockpit alert went high at that moment—and I saw him with his head bowed while the light passed, gazing at the [floor] and I guess he remained like that for the following seconds."²⁴

Capt. XX provided the following additional comments about these final moments during the close encounter: "I don't know why I didn't look at [the UAP] in its closest moment. Something I would not [have] missed at any cost. But I missed the very moment that I could have [had] more answers—or perhaps more to wonder [about]. But somehow, I did not look [at it] and I cannot understand why."²⁵

It was then during the flight that Capt. XX asked Capt. YY, "Did you see this? Have you seen this?" He answered, "I saw it, but if you say that, I will deny that I did. I know what it was, but I'll deny [it]."

I wrote to Capt. XX to ask if he would feel comfortable with me remarking that any pilot would have been very frightened or panicked by seeing such an aerial object approaching them while in flight. He replied, "I was worried. The other captain was apparently not worried. At our closest moments with the object we were silent. And [I conducted the] detouring maneuvers, at least on my part in [a state of]

apprehension, uneasiness. There was no panic, but perhaps a reflexive behavior when the light passed from left to right in the cockpit, making us duck [in] some way. At the moment I started to bank right I really did not see the size of the object and I cannot explain why I did not look at it. Afterwards, when we looked at each other, I would say that a relief came. My thought at that moment was, that was too close for comfort."²⁶

Location C' in Figure 9 is where the UAP appeared to be when the airplane was at Location C. The calculated separation distance between them was only about 3.8 nautical miles. With the airplane traveling at 150 knots and the UAP also traveling at an assumed velocity of 150 knots, the time to impact would have been about 77 seconds.

After the UAP had passed beyond the airplane, Capt. XX maneuvered to intercept the localizer and completed the approach and landing on Runway 17R.²⁷ The UAP departed off toward the left side of the airplane, maintaining its altitude. Capt. XX continued to look at the UAP from his seat on the right side of the cockpit until the airplane was nearing the outer marker about 5.5 nautical miles from the runway.

Significantly, no air turbulence was felt at any time during this event. It is also important to note that this near miss took place only about 15 miles north of the runway threshold. We can ask whether tower personnel could have seen this event if they had been alerted in advance and looking in that direction. This is more likely if the UAP was continually emitting bright light in all directions as the witness's following testimony suggests. Capt. XX wrote that "The interesting fact at this time [was] that regardless of the angle you looked at the object [it] was still a bright light discarding the possibility of [it being] an aircraft."²⁸

At this point it is necessary to consider another approach plate for São Paulo airport (SANTANA I Arrival) presented as Figure 8. This is the first approach chart the witness provided the author before he had more carefully reconsidered the flight path he had followed during the incident. He marked six locations in black pen on this chart.²⁹ Circles labeled A, B, and C correspond to the three airplane locations discussed above. Crosses labeled A', B', and C' are the estimated positions of the UAP at corresponding times.

It is important to note that the apparent flight path of the UAP was linear and directed toward or near the EVER navigational fix where the airplane also was headed. The UAP never appeared to veer toward the airplane; both were on a converging course. "By no means [did] the UAP move towards my path when I was [flying on a heading of] 106° before my detour."³⁰

It will be noted that the three positions of the airplane depicted in Figure 8 differ somewhat from those shown in Figure 2. This is because the witness subsequently remembered that he hadn't used the SANTANA I arrival chart during this event but, rather, the MADA arrival (Figure 2). Figure 8 is presented only for its depiction of the three UAP positions and their distances apart relative to the more

A to B or 5.7 minutes. This represents a UAP velocity of about 28 knots.

If the distance traveled by the UAP from B' to C' is about 3.7 nautical miles and the duration of its flight was 3.8 minutes (again using the airplane's known flight distance and velocity as a reference), then the UAP's velocity would have been almost 58 knots.

Finally, if the distance traveled by the UAP from location C' to the EVER fix is about 2.6 nautical miles and it was covered in only 92 seconds, the UAP would have had to be traveling at over 100 knots. Even relatively small changes to the estimated UAP locations shown on Figures 8 and 9 could even out the calculated velocity of the UAP to around a constant 65–75 knots.

THE UAP

The reporting witness provided the following additional details about the UAP over the course of the approximately 14.3-minute-long sighting.

Appearance. Initially the UAP appeared as a very small, self-luminous area of bright white (“crystal”) light, something like a single landing light on some airplanes. It was large enough to not qualify as an optical point source. “I saw no change in color at any time. It only seemed stronger [more luminous] as time went by.”³¹

When asked about his statement that the center or body of the UAP had a “milky white” appearance he replied, “By milky I mean that it was more concentrated, not that there was a mixture of colors, but a single, unique color that I could infer it was a body, although I could not see its surface directly.” Later in this same correspondence he wrote, “It was not silver.”³²

When asked about his general impression of the shape and luminosity of the UAP, taking into account his entire period of looking at it, the witness replied, “I saw it was round, although I could not say it had any inner surface, that is, something [that] one could touch; in its center it had a more . . . milky light. . . . Now this center is not a single point [within] the object, but the very round shape of a more consistent light, which I refer [to] as a ball [of] light. Around this (ball) there was also light, with some minute streaks coming from [it]. . . . The surrounding light was not as strong [luminous] as was the center object.”³³ At no time during this encounter did its outline shape change from “round.”

Considering relative size of the UAP, the witness stated, “Let’s say the inner ball [is] 10 cm [then] the outer sphere will be 10 cm plus 2 cm [in diameter].”³⁴ When asked whether there was a hazy appearance like fog that produces a gradation of luminance from the more luminous to less luminous area he replied, “Not exactly. The decrease was abrupt between the two areas [spheres], so that a clear distinction could be seen.”³⁵ It is quite clear that the outer shell of light was semitransparent, of the same color, but also of lower luminance. This description has some elements in common with a spherically shaped, contained plasma where the sur-

face of the innermost sphere is at one energy level and the outer boundary is at a different level. If the outermost shell was less optically dense for some reason then it would tend to possess a lighter luminance than the inner core. What would produce a clear edge or boundary for both the inner and outer cores is not known.

The UAP had no colored navigation lights. It is important to note here that the UAP did appear to increase significantly in apparent size during its approach as has been mentioned above.

When asked about the color and origin of the streaks of light that seemed to be associated with the UAP during his sighting he answered: “[They were of the] same color as the main body or ball. I cannot say that they emanated from the centroid of it or, let’s say, from its surface but they came [from/out of] the denser [inner] ball, not from the surrounding or external, fainter area. . . . I could not see any specific area in the inner ball that the streaks came out [of]. . . . The streaks were of the same strength [luminosity] as the inner ball, same quality, same intensity.”³⁶

When asked about how often the light streaks would appear he answered, “This [question] is quite a tough one. First, they weren’t abundant at all. At [the] distance when I [first] saw it [they] seemed to be fixed [emitted at a fixed interval]. As we came nearer I could see that they changed a little. I don’t know if that was due to our angle [of view] that changed . . . or because it really changed. . . . At the nearest [position], although I didn’t look at it directly, I had the sensation they [the flashes] were fixed. . . . I think it was a guided beam [not the streaks] that reached us, since it traveled from [our] left to right, as scanning and then mixing with the light coming from the streaks themselves plus the body, for the cockpit became more luminous.”³⁷ The witness also said that he was certain the light flashes appeared to travel or extend beyond the edge of the outermost ball of light. Some of the streaks traveled beyond the outer edge by about the thickness of the outer shell of light.³⁸

Velocity. The calculated velocity of the UAP from Locations A' to B' and from B' to C' is on the order of 28 knots and 58 knots respectively, if the distance estimates provided by the witness are at all accurate. If the actual distances to the UAP are less, then these velocities would also be less. But what is more interesting is the calculated increase in its velocity from location C' to EVER where a velocity of over 100 knots was calculated. If these values are accurate to first-order magnitude, they suggest that the phenomenon had accelerated to double its velocity so as to arrive at location EVER when the airplane would arrive there. The levels of navigational-guidance and energy-management technology needed to achieve this objective are very high indeed.

While the airplane was flying between points A and C (Figure 8) the unidentified traffic appeared to be traveling at a “low speed.” This judgment by the witness is based on a great many hours of flight experience where other airplanes are seen at large distances. Nevertheless, if a distant moving object or phenomenon can’t be identified, then its absolute

size, distance, and to some extent even its velocity, cannot be judged as accurately. This is particularly true when the viewer is also in a moving vehicle and the UAP is viewed above the horizon where stable spatial references are not present. Here the UAP appeared to be moving through a horizontal arc in the sky, from the witness's right toward his the left.

Size. It is instructive to try to gain some rough idea of the size of this UAP. Earlier Capt. XX said, "My feeling was that it [the UAP] was not huge because I saw a ball of light and [at] the closest moment that I could still think 'I can wait [to carry out any needed evasive maneuver].' It appeared to be around one meter in size, perhaps a little less or a little more." However, the witness later provided a second size estimate based on a known object, namely a Piper Cherokee 140 as seen from another airplane cockpit in flight. "If you draw its diameter [length] on the horizon and add [a] light we are close to what I could see, at the closest moment."³⁹ A Piper Cherokee PA-28-140 is 23.3 feet long. When viewed at a distance of 3.9 nautical miles, that is, from location C to C', the UAP would subtend an angle of just over 3' arc; in other words, the UAP would be approximately equivalent in actual size to this small airplane.

POST-FLIGHT EVENTS

Neither pilot reported this incident to their company. Capt. XX said, "I myself did not talk about that [the sighting] outside of the cockpit since he [the senior captain] was already quite fed up with [our] company's policies."⁴⁰ There is a possibility that he told another pilot friend of his of long standing. Some years later, Capt. XX wrote a brief summary of his sighting and submitted it to Orkut, a Google Brazil international social-networking service.⁴¹

DISCUSSION

Quite apart from the important question of the nature of this UAP is that this near-miss incident raises serious questions concerning flight safety. This is particularly true because it took place very near the busiest airport in Brazil on a weekday afternoon and yet was not detected by any ground radar or (apparently) visually by personnel in the airport tower. However, if the UAP was relatively bright and radiated in all directions (as from a point or an isotropically radiating sphere), it might have been seen from the tower if someone had been looking in that direction at the right time. If this UAP was not detected at all by tower or radar personnel, there is no way in which air traffic control could have warned airplanes in the vicinity to avoid it. This kind of incident appears to be a much more common occurrence around the world than is usually acknowledged (Haines, 2000, 2002).⁴² Also, whatever this UAP was, it passed within a relatively close distance to the airplane, putting it in danger either from collision, electromagnetic interaction with avionic systems, or a rapidly executed and unplanned maneuver by the pilot to avoid a collision. Fortunately, none of these situations occurred. The pilot did the only thing he could have done

to avert an in-flight collision, and he did it professionally and safely.

Could this UAP have been a helicopter of some kind, an unmanned aerial vehicle (UAV), or a weather balloon?

Helicopter. The AIC circular (2005) presents current operational and technical requirements for operating a helicopter within the controlled airspace of São Paulo. The effective area of positive control of all helicopter operations in the vicinity of the city is defined by a radius of 13 nautical miles from the airport's established latitude and longitude coordinates (Lazzarini and Ali, 2005). All helicopters also must be equipped with Mode C transponders with altitude-reporting capability. The maximum velocity of helicopters flying into and away from Congonhas Airport is in the 80–100 knots range. They must be under positive air traffic control at all times. The calculated velocity of the UAP (see above) was within this range of velocities.

Many helicopters, light twins, and private airplanes now use the Campo de Marte Airport (Figure 10) along with Air Force aircraft. The witness thought that when first noticed the UAP could have flown over this airfield. It is located approximately between Cumbica Airport and Congonhas Airport at 23° 30' 32.9" S, 46° 38' 15" W.

Nevertheless, if this UAP had been a helicopter, the flight crew would certainly have been able to identify it as such, especially when it was at closest approach.

Unmanned aerial vehicle. Brazil is continuing to investigate the advantageous features of UAVs for various applications (Brandão et al., 2007). In reviewing the aerodynamic shapes of the UAVs presented at the First Latin-American UAV Conference held in Panama City in August 2007, none were found to be spherical. All of the proposed UAVs used stationary or rotary wings for lift and traditional means of propulsion except for one. Called the Aurora Project, a 9-meter-long lifting vehicle is under development as a sensor platform. Its dirigible outline shape is very familiar and could not be confused as a sphere for very long when viewed from different angles.

Whether or not a spherical UAV was in use in 2004 and flown in the vicinity of Congonhas Airport is very unlikely,



Fig. 10. Aerial photograph of Campo de Marte Airfield, São Paulo

however, for several reasons. First, air traffic control authorities told Capt. XX that there were no other transponding aircraft in the area of this flight on their ground radar when this UAP was seen. All UAVs are required to be under positive ground radar control at all times, and a transponder must be onboard. Second, while there is a spherical UAV produced in the United States,⁴³ there is no evidence of it being used in Brazil in 2004. Unless a spherical UAV was present but flying without any transponder signal, it is very unlikely that this UAP was a UAV. Third, an operational or test flight of a UAV would be expected to be announced in advance by NOTAM or a similar announcement. No such notice was published. Finally, it is unlikely that an operational or a test flight of a UAV would be carried out so near to a runway approach corridor to the busiest airports in Brazil.

Weather balloon. The witness said that he has seen a great many balloons of all kinds in his flying career. They appear dark on the horizon during the daytime. Other pilots will report their presence to air traffic control for transmission to other pilots in the region. Also, all weather balloon launches must be reported in advance. "They are completely different [from this UAP] as to brightness and shape."⁴⁴

CONCLUSIONS

This incident leads to virtually the same conclusion as presented elsewhere regarding another busy airport-related case (Haines et al., 2007). It is becoming increasingly clear that some kind of uncontrolled and nonresponsive visual phenomenon is flying within or very near the controlled airspace of modern-day airports yet is not detected visually from the control tower or by ground radar. Aviation officials should take these events seriously and mandate the installation of radar systems that have a broader range of wavelengths than they now do.⁴⁵ At the same time, pilots should report their sightings to the authorities in real time in order to document them and to improve the chances of immediate ground detection of the UAP. Finally, government aviation officials and airline management must encourage, not discourage, such pilot reports for the long-term benefit of flight safety. This UAP remains unidentified at this time.

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ENDNOTES

1. The witness wrote, "we were arriving during the afternoon, most probably [at] the end of the day in VMC [Visual Meteorological Conditions]." Personal correspondence, April 15, 2009.
2. An attempt is being made to locate him for purposes of an interview.
3. Personal correspondence, May 20, 2009.
4. Personal correspondence, June 1, 2009.
5. Personal correspondence, June 2, 2009.
6. Personal correspondence, May 27, 2009.
7. MADA Arrival, São Paulo, Congonhas International Airport (dated December 6, 2002). The original arrival plate was not available; however, the distances shown on this plate are still accurate.
8. Personal correspondence, May 13, 2009.

(continued on page 23)

COMMENTARY ON THE SÃO PAULO NEAR MISS

BY ROBERT J. DURANT

As a veteran of 31 years flying in the cockpits of airliners, I read the account of Captain XX's UAP encounter (see previous article by Richard F. Haines) with great ufological interest, but also noted an aspect of the story that might escape the average reader. This concerns the personal interplay between the two pilots.

We think of aircraft-accident investigations as the purview of engineers, and in fact that was their exclusive domain until the 1980s, when persistent nagging by social scientists, particularly psychologists, opened the way to an additional means of investigation.

The event that triggered the inclusion of psychologists was the crash of United Airlines Flight 173 near Portland, Oregon, on December 28, 1978, in which 10 passengers and crew were killed. The airplane ran out of fuel in a holding pattern near the Portland airport while diagnosing a faulty landing-gear indicator light. But on the cockpit voice recorder the flight engineer could be heard saying they were close to empty on the fuel. The captain and copilot ignored this, and kept fiddling with the gear indicator. How could this happen?

To the psychologists, it was caused by human failure to communicate, and they urged investigation into the personalities of the three crew members. This truly novel idea was followed up by extensive interviews with professional colleagues, friends, and family members of the pilots. What emerged was a picture of an extremely assertive, perhaps even arrogant captain, a weak-willed copilot, and a flight engineer who had been hired only a few months previous to the accident, and was cowed by the authority of the other two, particularly the captain.

Other accidents were reviewed using psychological criteria and revealed a pattern of unsatisfactory communication, in which one crew member—not necessarily the captain—dominated the atmosphere, and information sharing greatly suffered. In this way, small problems cascaded into fatal crashes. If the pilots had simply been talking to each other, rational priorities would have prevailed.

By the mid-1980s all airline pilots were required to take a three-day course in Cockpit Resource Management (CRM), a systematic exploration of different personality types, how they affect the complex cockpit interplay, and the ways for crew members to adjust their individual responses. (I consider CRM to be a critically important advance in aviation, on a par with the perfection of navigation and engine reliability.)

This brings us to the account of the pilots who were on the way to the São Paulo airport. Unlike the accidents in

which a cockpit voice recorder transcript is available, we have only the recollections of the pilot Haines calls Captain XX. Nor does XX dwell on the CRM issues, but he leaves enough clues to tell me that his colleague in that cockpit could use a few days of training in those skills.

The honorific "captain" derives from nautical usage, and officially is "pilot in command," meaning the person designated by the airline and thus by government authorities as having ultimate authority and responsibility for the flight. The second in command is usually called the "first officer," also in accordance with nautical usage, or informally as the "copilot." Usually these positions are assigned by seniority, with the captain being the pilot with longer time on the airline's rolls. Often a copilot is qualified as a captain, and may have flown as captain in the past, which is the case with Capt. XX. Thus he is entitled to be called captain, but it could be confusing where two captains seem to be in the cockpit. Capt. XX was the second in command on that flight. Haines distinguishes the two captains by calling the pilot in command the "senior captain."

It may come as a surprise to some that the normal procedure in the airlines is to switch the pilot-flying roles, with one pilot doing those duties on one leg, and then the other accomplishing them on the next, and so on through the days of duty. That is, the pilot flying manipulates the controls throughout the flight, including the takeoff and landing, with the other pilot doing the radio calls, operating the landing gear and flap controls and the like at the request of the pilot flying. In this manner workload is shared and decision-making ability is enhanced. However, regardless of which pilot is at the controls, ultimate authority always rests with the captain. Capt. XX was the pilot flying on the leg to São Paulo.

Let's examine the interplay between the two pilots using the words provided in Haines's original report, and viewed in terms of CRM. This entails asking whether information was shared, if the non-flying pilot took any of the decision-making burden, or how he otherwise supported the pilot flying during this extraordinary airborne encounter. In sum, how effective a helpmate was the senior captain? Can we infer anything about the personality of either pilot from the following fragments of testimony?

the senior captain "refused to acknowledge the event in public." . . .

The second eyewitness was Senior Capt. YY, 52 years old, sitting in the left seat. During the sighting Capt. XX turned to his left and asked him, "Did you see this? Have you seen this?" He answered, "I saw it, but if you say that,

Robert J. Durant is a former airline pilot who has studied UFOs since the 1950s.

I will deny that I did. I know what it was, but I'll deny [it]." Nothing more was said between them for years. More recently the senior captain has been employed by another airline. . . .

Capt. XX said that somewhere between Location A and B he asked Capt. YY to contact center to ask about other possible traffic in the area. But even when they arrived near the SANTANA VOR fix he had not done so. Capt. XX contacted center himself. . . .

Capt. XX asked Capt. YY if he was looking at the other unidentified traffic and learned that he was. The traffic continued to appear to be approaching their airplane. He also asked the senior captain how long approach control would remain silent about the other traffic. About then he noticed that the other object had no navigation lights, but looked only like a self-luminous point or ball. He then asked the Capt. YY to contact ATC. . . .

After an unspecified period of time when the senior captain had not called ATC, Capt. XX called them himself.

Capt. XX said that the relative bearing to the UAP from the airplane was now only about 6° to their right, which confirms the pilot's stated concern that it might collide with them if they both continued their present flight paths. . . .

At this point during the flight Capt. XX said, "this guy [UAP] is very close and is [still] approaching us. This is not an aircraft, only a light, and we are very close." . . .

. . . the UAP was now so close that Capt. XX decided to turn off the autopilot, bank sharply to the right, and descend slightly to avoid a collision. . . .

"Well, as soon as I initiated the curve [began to bank right and descend] perhaps in 2 seconds the beam came. I guess I would say about 8 seconds until the beam of light went away. . . . Well, I was with the controls, having

the object [so] close by and having to detour and fly the airplane. I think that when I [made] that decision, I started to look at him [Capt. YY], like conveying, 'you see what I am doing?' and immediately [the] light came around [and the] cockpit alert went high at that moment—and I saw him with his head bowed while the light passed, gazing at the [floor] and I guess he remained like that for the following seconds."

It was then during the flight that Capt. XX asked Capt. YY, "Did you see this? Have you seen this?" He answered, "I saw it, but if you say that, I will deny that I did. I know what it was, but I'll deny [it]." . . .

"I was worried. The other captain was apparently not worried. At our closest moments with the object we were silent. And [I conducted the] detouring maneuvers, at least on my part in [a state of] apprehension, uneasiness. . . .

"I myself did not talk about that [the sighting] outside of the cockpit since he [the senior captain] was already quite fed up with [our] company's policies."

It is possible that Capt. XX's account is self-serving and contrived to raise his status in the eyes of the investigator. And he relies on memory, not on any exact transcript of the various exchanges in the cockpit. However, taken at face value, the descriptions are such that the senior captain stands out as an object example of ineptitude, almost a cartoon version of the worst characteristics identified by CRM.

Even when there was a realistic chance of disastrous collision, he furnished no help to the obviously overloaded XX. Recall that XX, in his fear of collision, turns off the autopilot, sharply banks to the right, and noses down—most unusual maneuvers in an airliner—and then looks over at the senior captain for some kind of response or reassurance, but gets nothing. ♦

REPORTS FROM LOUISVILLE AND KANSAS CITY

Roger Marsh writes: "Reports of UFOs over Louisville (Ky.) International Airport on June 24 may include multiple sightings from various employees. A package handler at the airport first heard a report over his radio about 10:30 a.m. that there was a UFO over the North-South runway. The man did not see anything at that time, but at 1:55 p.m., he saw a reflection in the sky from the south end of the runway.

"As this object came closer,' the witness stated, 'I could make out it was rotating and was a cylinder, then was a diamond shape.' He said the object moved in a straight line over the runway at a slow and steady speed at a point just under the cloud cover, approximately 1,500 feet. The object stopped at the end of the ramp and hovered for 30 to 45 seconds, then moved up into the clouds and disappeared.

"Louisville International Airport is both a civil-military and public airport in the city of Louisville, covers about 1,200 acres of land, and has three runways. The field was formerly known as Standiford Field. Kentucky's Air National Guard's 123d Airlift Wing is based here, operating C-130

transport aircraft. UPS also operates there as a hub for its package delivery service.

"A report was made that military planes and helicopters moved quickly onto the scene after an unusually shaped spherical UFO flew into the Kansas City, Kansas, area and hovered. A woman in the area was outside at 2 a.m. on June 16 and looking toward the public forest area behind her home when she noticed a large white light moving toward her—and getting larger as it came closer. When the object stopped, the woman used binoculars to get a closer look.

"She described the object as 'three large spheres connected together with a large arm or protrusion extending out at an angle underneath the craft. The arm was moving around in a circle.' The object emitted a bright white light and stayed in that position until it just disappeared.

"Shortly afterwards, military planes and helicopters moved into the area and seemed to be searching the same area for about an hour."—*UFO Examiner*; June 25, 2009. Marsh is director of communications for MUFON. ♦